



Red Team I

on

ISS Utilization Management

(Second Visit)

Final

August 12 and 13, 2002



-
- We again commend the Blue Team on their long, hard work, work that is critically important to the success of ISS and the Agency.
 - In general the Blue Team has been very responsive to our recommendations from our first visit.



Thanks for the Great Support !

Barbara Kreykenbohm

Gail Herzenberg



Red Team I Charter

- Review for technical accuracy, completeness, and viability
 - Process: will this process result in adequate trades?
 - Products: appropriate level of detail, all necessary products?
 - Schedule
 - Forward action plan
- Informally review Red Team I findings with the Team and provide guidance on process, products, schedule and forward action plan.
- Document (written) and present (oral) findings and recommendations to the OBPR Associate Administrator.



Red Team I Membership

H / Harold Jefferson

M / Donna Shortz (absent)

B / Scott Black (absent)

S / Y / GSFC/ John Campbell PhD,

Dave Leckrone PhD

U / Eugene Trinh PhD, David Tomko PhD

ARC / Scott Hubbard PhD

GRC / Steve Simons

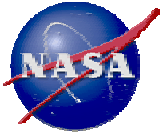
JSC/ Mike Sufferdini, Charles Stegemoeller

KSC/ Maynette Smith, Randy Galloway (absent)

LaRC/ Roger Breckenridge PhD

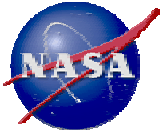
MSFC/ Jan Davis PhD, William R. Hicks

SSC / Mark Mick

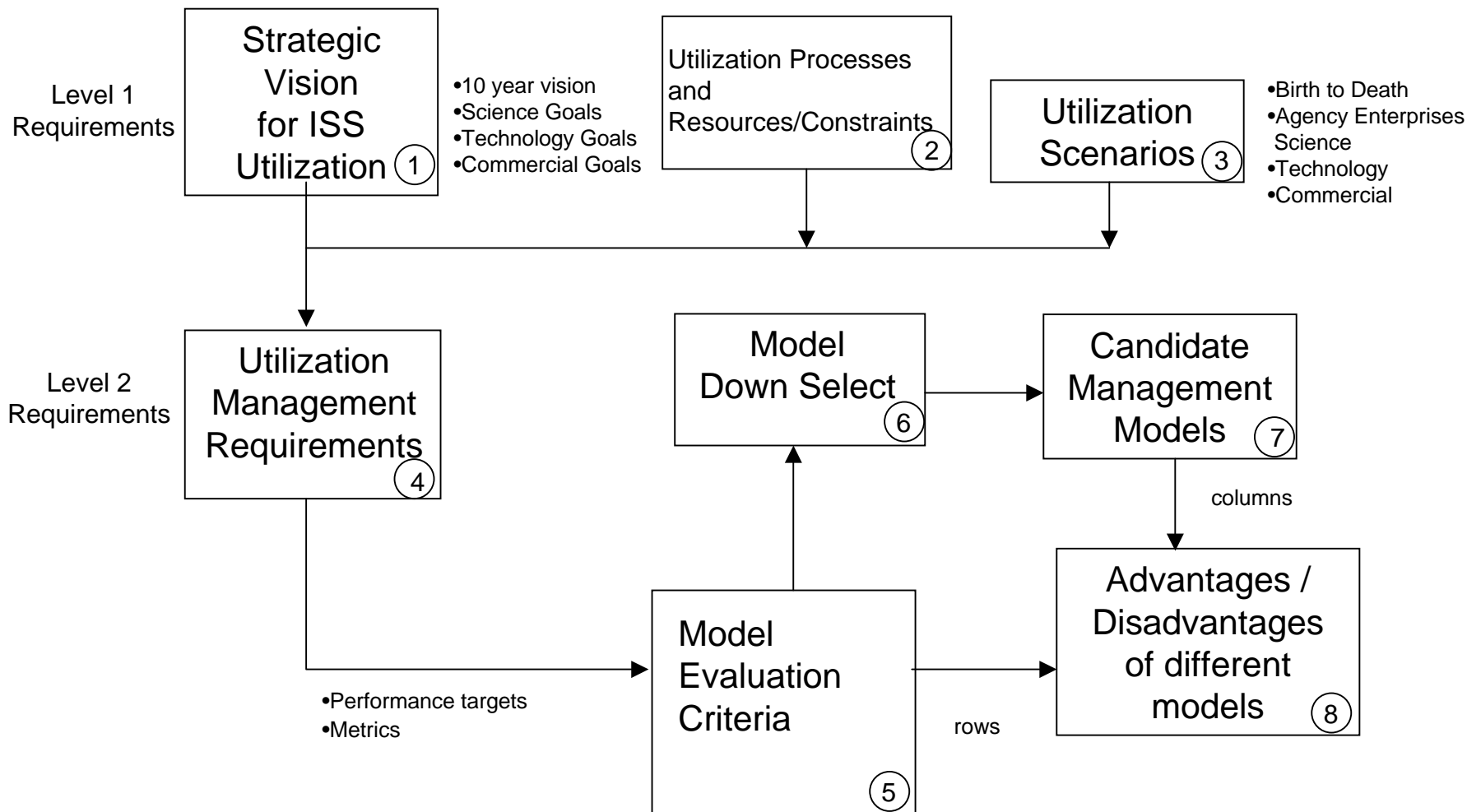


Agenda

| | | |
|---------|---------------|--|
| Monday | 1:00 - 1:15 | Re-introductions of team and charter. Agree on agenda. Room 3H46 |
| | 1:15 - 1:30 | Mary Kicza |
| | 1:30 - 2:00 | Review comments on material in notebook |
| | 2:00 - 3:00 | Blue Team briefing |
| | 3:00 - 5:00 | Discussion & Work Assignments |
| Tuesday | 8:00 – 9:30 | Discussion. Room 3H46, breakouts @ (8W25 & 8K31) |
| | 9:30 – 11:00 | Prepare Presentation |
| | 11:00 – 12:00 | Final Report to Mary Kicza |



Process





Step 1: Agency's Strategic Vision for ISS Utilization

Level I: Goals/Vision/Requirements:

Required: **The Agency's strategic vision for ISS Utilization**

- Must take into consideration uncertainties/drivers such as:
 - Agency Enterprises
 - Agency Scenarios
 - ISS Configuration and Evolution (e.g., number of racks, crew size, attachment points)
 - ReMaP
 - etc.
 - International Partner (IP) Relations
 - Goals of ISS in context of
 - Science
 - Technology
 - Commercial
 - Agency Advisory/Stakeholders Structure
 - Agency Priority Decision Tree/Authority
- Action: Distinguish/Evaluate Similarities/Differences of 3 (science, technology, commercial)
- Outcome: Performance Targets for evaluating Utilization Management Model



Assessment Step 1

The Blue Team has been responsive to our recommendations.



Step 2: Establish Utilization Processes and Resources/Constraints (Present state)

- Required:
 - Agency Policies/Procedures
 - Utilization Selection Processes (e.g. peer reviewed science)
 - International Partner Agreements
 - Intellectual Property (e.g. commercial)
 - 30/30/30/10 Resource Allocation Policy
 - Programmatic Resources/Constraints, e.g.,
 - Vehicle (STS, ISS, resupply, etc.) capabilities
 - ISS configuration
 - Budget
 - Infrastructure
 - Interdependencies with other NASA programs and institutional assets (people, facilities, etc.)
 - Schedules
 - Crew use
 - Research Priorities
- Action: Establish Utilization Processes/Drivers
 - Transaction Flow Diagrams (steps/procedures) [At one step lower level of detail than shown in “Top Level Flow ISS Utilization”]
 - End-to-end cycle time for classes of payloads



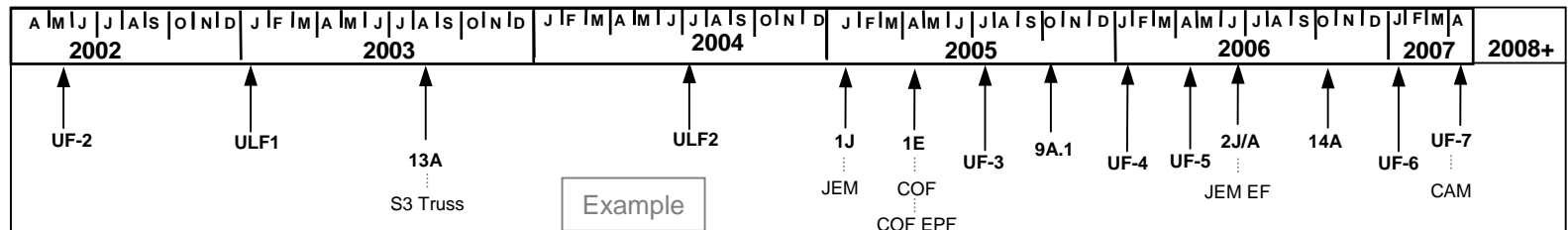
Assessment Step 2

The Blue Team has been responsive to our recommendations.



Step 3: Utilization Scenarios

- Outcome:
 - **A)** Benchmark payload complexities that represent present and future requirement flows, e.g.:
 - Racks - STS -- ISS -- Operations
 - Middeck Lockers - STS -- ISS -- Ground
 - Attached Payloads - STS -- ISS -- Operations
 - Human experiments on IP modules using commercial equipment
 - **B)** Establish scenarios of manifest and platform availability for payloads over time, e.g.:

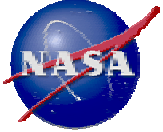


- **C)** Characterize drivers of the 3 types of payloads (science, technology, commercial) considering the different Agency Enterprises to establish relationships to Management Model Support (e.g. Commercial Payload Rapid turnaround)



Assessment Step 3

The Blue Team has been responsive to our recommendations.



Step 4: Utilization Management Requirements

- Action: Develop utilization management requirements derived from Steps 1, 2, & 3
- Outcome: Rows of Advantages/Disadvantages matrix (at a level containing 10's of entries, not 100's)
 - Performance Targets
 - Metrics
- Sources:
 - Products of Steps 1, 2, & 3
 - Transaction Diagrams
 - Work Breakdown Structure (WBS)



Assessment Step 4

Assessment of Steps 4 and 5 are combined after Step 5



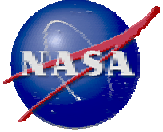
Step 5: Model Evaluation Criteria

- Performance targets (from Step 4.)
- Metrics (from Step 4.)
- Add to criteria: Areas of improvement based on present performance.
Integrate/consolidate existing customer surveys for areas of improvement (at a level consistent with block 2). Use data sources such as: PPMR; POCAAS; SSUAS Advisory Group; PI and payload developer interviews
 - A. What is working very well?
 - B. What is working but can be improved?
 - C. What is broken?
 - What are the possible fixes?
- Evaluate the “present” state as the first column of the models in the matrix
- Develop relative weighting of criteria



Combined Assessment Steps 4 & 5

- Observation & Recommendation: Evaluation criteria are rolled up to a very high level resulting in just four performance and four business entries
 - We recommend eliminating the few very high level entries and adopting a larger number of clear discriminators, approximately 20.
- Recommendation: Each evaluation criterion should be:
 - Carefully described and documented
 - Traced to a specific aspect of the strategic vision/performance targets/areas of improvement
 - The criteria required to meet each measurement value (+2,+1, etc.) should be stated



Combined Assessment Steps 4 & 5

- Areas of Improvement
 - **Observation:** We could see some items in the evaluation criteria that were obviously “Areas of Improvement,” yet we could find no traceability and analysis of these items back to their source in the work products.
 - **Recommendation:** Identify the criteria derived for “Areas of Improvement,” particularly what is not working (broken). Trace each to its origin, such as the advisory groups, interviews and the user workshop. Show the analysis that results in the high priority problems. Ensure these appear in the evaluation criteria.
- Evaluation Criteria
 - **Observation:** Assessments (scores) that might provide a level of discrimination, e.g., foster greater involvement in ISS, are not visible
 - **Recommendation:** Develop evaluation criteria that provide clear discrimination between management options. These criteria should be derived from the strategic vision, performance metrics and areas of continuous improvement.



Step 6: Model Down-select

- Extend candidate models to include combinations of organizations
 - Consider different partitioning options between NASA and NGO functions
 - Instead of basing models on assigning functions alone, construct models with sufficient consideration of the effects on process flows to avoid adding complexity, excessive handoff points, and lack of accountability.
 - Are Multiple NGOs required (research vs commercial?)?
(zero, one, multiple)
- Considerations for NASA
 - Inherently governmental: legal, procurement, FAIR
 - Core Competencies
 - Appropriately governmental (safety, e.g.)
 - Management functions
 - Policy
 - Budget
 - Schedule and phasing of implementation
- Start with a broad range of models and downselect to a few.



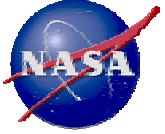
Assessment Step 6

- **Recommendation:** The criteria used to down-select from 22 to four options should be stated.
 - Down-selection criteria should include the evaluation criteria
 - All four subteams should use the same down-selection criteria. (It was not clear that this was the case.)
- **Four Options**
 - **Observation:** We are concerned that only four options will be evaluated.
 - **Recommendations:**
 - Additional horizontal (same business model) and vertical (mixture of business models) hybrids may be possible/valuable.
 - Limiting the number hybrids to one each for a business model may eliminate viable options.



Step 7: Candidate Models

- Product of the down-select process.
- Provide the columns for Advantages/Disadvantages matrix.



Assessment Step 7

See Assessment of Step 6.



Step 8: Advantages & Disadvantages

- Evaluate the models:
 - Complete the matrix
 - Where do we want to be vs where we are today?
 - How well does each fulfill the targets, metrics, and improvements?
 - Evaluation requires comparison to existing management structures and lessons learned from organizations such as Hubble, SOFIA, Astrobiology, national laboratories , etc as a forecasting tool
 - Model evaluations need to address the following types of performance based questions:
 - Adaptability to ISS configuration changes;
 - Ability to accommodate work in progress (flight investigations, significant development, etc);
 - Time Phasing implications of implementation of management model
 - Estimate ROM FTE, cost implications
- Produce a narrative of strengths and weaknesses for each model.



Assessment Step 8

Not completed.



Products

- We recommend the team focus on only those products required to complete the evaluation matrix.
 - Other products that have been developed should be useful in the procurement development process.
- The products should only be at the level of detail needed.
 - For example, the WBS, inherently governmental and interface matrix are at a much greater level of detail than necessary.



Assessment of Products

The Blue Team has been responsive to our recommendations.



Schedule

- The lack of input at the strategic level and uncertainty in basic assumptions (crew time, priorities, etc.) make it nearly impossible to go forward with a definitive plan having a reasonable chance of being successful, in the short term. A possible solution is described in Appendix B.
- Schedule for the reviews by Red Teams is compressed and is not consistent with REMAP delay and distillation.
Recommend revisit of schedule and products.
 - Present schedule for User's Conference seems inappropriate, too little time after REMAP
 - Budget input regarding NGO should be delayed until after Blue Team evaluation is complete
- We do not recommend a Red Team II until much, much later in the process.



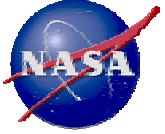
Assessment of Schedule and Forward Action Plan

- **Recommendation:** While the Blue Team reduced the options, the technical feasibility regarding implementation of the four remaining options is not being reviewed by either Red Team I or Red Team II (which is looking more at competencies, workforce, etc.). We recommend that the implications of transitioning from the present state to a future state be considered.
- **Observation:** If the Blue Team adds options, then it will probably be necessary for the Red Team II to return and meet again.



Observations

- The Blue Team did a really good job with the package; there is a lot more directly useful information available in this package than in the last.
 - We particularly appreciate the organization of the package which mapped well to the process steps.
- Scoring with five values may diffuse or hide weaknesses.
 - The final evaluation must take into consideration both strengths and weaknesses and not merely the final score.
 - Consider using an evaluation scale with fewer values.



Conclusion

- We see great progress in the convergence of the strategic vision into optimum research utilization of the space station. We urge continued attention to completing this linkage.



Back Up



Observations

Comment from Randy Galloway: “Tab 20, Payload complexity matrix. I understand what they did on this matrix, but I think it paints with a very broad brush and misses the boat on some. All technical /programmatic complexities are not created equal as this implies. From my experience, anything requiring crew /EVA interfaces is a huge thing. I think MELFI got underscored somewhat in that they appeared to ignore the fact that: 1) it has to operate on orbit in various places, 2) in an MPLM on the ground prior to launch and after landing with 3 different power sources, yet it scored 0 for ascent and launch landing (normal) complexity. AMS, similarly, scored 0 for EVA, which I can’t believe. I think they might be better off adopting a 5-point scale for complexity, particularly if they hold the factors as equal.”



Observations

Comment from Maynette Smith: There is a Customer Needs Assessment Team that is working with the ISS Payloads Office to develop a survey system so that the ISS Payloads Office can better identify and address problems/needs of the PI's and PD's. An independent entity (KSC/XA) solicited the PI's/PD's on strengths and weaknesses based upon their experiences. It may be helpful, if the Customer Needs Assessment Team is comfortable releasing that information to the Blue Team, to provide this data to the Blue Team to help them in their assessment, as it gives some additional input from customers and did not specifically question them about the NGO but about existing strengths and weaknesses within the current process and structure and can be compared to comments from the User's Conference.